

A MEMBRANE/DISTILLATION METHOD AND SYSTEM FOR EXTRACTING CO₂ FROM HYDROCARBON GAS

ABSTRACT OF THE DISCLOSURE

A method of separating CO₂ from a hydrocarbon gas inlet stream that is within predetermined pressure and temperature ranges, including the steps of subjecting the inlet stream to fractional distillation providing a CO₂ bottom product stream and a distillation overhead stream, passing the distillation overhead stream to the inlet of a primary reflux drum producing a primary reflux liquid stream and a hydrocarbon vapor stream, subjecting the hydrocarbon vapor stream to membrane separation to provide a hydrocarbon product stream and a permeate stream, compressing the permeate stream and recycling the compressed permeate stream to the inlet of the primary reflux drum thereby providing a CO₂ liquid product and a hydrocarbon gas product.